

WHAT IS CLAIMED IS:

1. A reduced gain thrust control valve for use in a rocket engine comprising:

a housing having a fluid inlet;

said fluid inlet having at least one metering element formed therein;

said at least one metering element comprising first means for producing improved control stability, second means for controlling thrust during a start transient engine phase, and third means for accommodating a retainer; and

a piston and cylinder unit for controlling a fluid output of said control valve;

2. A reduced gain thrust control valve according to claim 1, wherein said at least one metering element is machined into said housing.

3. A reduced gain thrust control valve according to claim 1, wherein said housing has a plurality of said metering elements machined therein.

4. A reduced gain thrust control valve according to claim 1, wherein said first means comprises a rectangular portion.

5. A reduced gain thrust control valve according to claim 1, wherein said second means comprises a tee and slot portion.

6. A reduced gain thrust control valve according to claim 1, wherein said third means comprises a fixed turbine bypass portion

7. A reduced gain thrust control valve according to claim 1, wherein said fixed turbine bypass portion is always uncovered and used to compensate for engine to engine variations.

8. A reduced gain thrust control valve according to claim 1, further comprising:

said housing having an opening and said retainer being positioned within said opening; and

said retainer having at least one fluid channel therein.

9. A reduced gain thrust control valve according to claim 1, wherein said piston and cylinder unit comprises a piston and a cylinder which move axially with respect to said housing.

10. A reduced gain thrust control valve according to claim 8, wherein said piston and cylinder unit covers and uncovers said first and second means of said at least one metering element.

11. A metering element for use in a reduced gain thrust control valve for an engine comprising:

a rectangular portion for providing control stability margin and a steady state operating range for said engine;

a tee and slot portion for controlling thrust during an engine start transient;

a fixed turbine bypass portion; and

said fixed turbine bypass portion accommodating a retainer having at least one fluid channel so as to produce repeatable fixed bypass flow metering.